

Chapter Review – Chapter 2

- 1) Given points A(2,3) and B(-2,1), find the equation of the line that passes through A and B in point-slope and slope-intercept form
- 2) Find the equation of a line CD parallel to line AB which passes through the point C(2,-3) in point-slope and slope-intercept form.
- 3) The average height in centimeters of US children from ages 7 to 15 is given in the table below. Use this information to answer the questions below.

Age (years)	7	8	9	10	11	12	13	14	15
Height (cm)	119.3	127.0	132.0	137.1	142.2	147.3	152.4	157.5	162.2

- a) Which variable should be the independent and which the dependent?
- b) What is a reasonable domain and range for this situation?
- c) Find the best-fit line for the data.
- d) Give the slope and its real-world meaning.
- e) Give the y-intercept and its real-world meaning.
- f) Discuss the correlation coefficient.
- g) Use your best-fit line to find the height of a newborn and a 40-year-old.
How do your values compare with the actual length of a newborn ($\approx 50\text{cm}$) and a 40-year-old? (1inch = 2.54cm)

Answers:

1) Point-Slope: $y = \frac{1}{2}(x - 2) + 3$ or $y = \frac{1}{2}(x + 2) + 1$
Slope-Intercept: $y = \frac{1}{2}x + 2$

2) Point-Slope: $y = \frac{1}{2}(x - 2) - 3$
Slope-Intercept: $y = \frac{1}{2}x - 4$

3)

- a. Independent: x-variable; Dependent: y-variable
- b. Domain (7, 15) Range (119.3, 162.2)
- c. $y = 5.235x + 84.304$
- d. Slope is 5.0833 and it means that between the ages of 7 and 15 the average child grows 5.0833 cm per year
- e. The y-intercept is 86.31667 and in the context of this problem, this would be the height in cm of a newborn.
- f. The Correlation Coefficient is $r = 0.9986$ which means that there is a very high correlation between the age and height of children between the ages of 7 and 15.
- g. According to the model, a newborn would be 84.304cm and a 40-year-old would be 293.7cm. These heights are both unrealistic because average growth for children under 7 is faster than 5cm per year and the typical person does not continue to grow until 40.